

by sensor 56 is then converted to an electronic signal which passes to microprocessor 52 through a wire 58.

The situation shown in FIG. 4 is duplicated for each of lamps 32, so that signals responsive to the light intensity sensed from each of lamps 32 is provided to microprocessor 52 as a separate electronic input through the respective wires 58.

Similarly, microprocessor 52, as stated before, defines electronic outputs 60 to wattage regulators 61, which separately communicate with the individual lamps 32, so that microprocessor 52 can adjust the intensity of emission of each lamp 32 on an individual basis in a manner which is responsive to the feedback received through sensor 56 in each instance.

Thus, by this invention, the output of the respective lamps 32 can be continuously monitored and adjusted to fit a predetermined, desired standard by three means:

1. Simply by raising or lowering platform 18 by means of motor 28;
2. By the controller (Analog or RAM and Microprocessor) 52, changing the output of lamps 32 through the wattage regulator 61, using inputted data; or
3. A combination of the above two methods.

Accordingly, the intensity of the light (irradiance) on the sample can be controlled, and continuous adjustment can be made to conform with the testing requirements required by the appropriate test procedure.

Also because of this, it can be assured that the actual irradiation provided to the respective samples 20 on different runs of the lightfastness testing chamber can be readily correlated with each other for accurate lightfastness and other stability data.

As shown in FIG. 6, the lower tip of light transmission rod 54 may be sheathed with a metal sleeve 63, which may extend the entire length of rod 54 if desired. Sleeve 63 may extend below the lower end of light transmission rod 54, to limit the angle α of light acceptance to rod 54 and thus to sensor 56. This expedient can help in assuring that the only significant light that passes through each light rod 54 to its respective sensor 56 is light directly emitted from the associated lamp 32. Thus, the independence of the data received from each sensor 56 is assured in that the light emission from each separate lamp 32 is separately sensed with less interference from other light sources, particularly the other lamps.

Referring to FIG. 7, as an alternative, light rod 54 may carry a similar sleeve 62, in which the lower end of the sleeve 62 defines an inner flange 64 to limit the aperture at the lower end of the light rod. This also can serve to make the light rod more selective as to the source of light that it receives, so that only the light from the associated lamp 32 is sensed by a given sensor 56.

FIG. 8 illustrates a method for calibrating the irradiance of the individual lamps to a quantitative level. Once this is done, the relative data provided by the sensors 56 and microprocessor 52 in accordance with this invention is correlated with absolute data, to provide a desired, quantitative irradiance from each of lamps 32 to samples on platform 18.

As a first step, one places a master calibrator sensor on platform 18. Such known sensors are able to provide quantitative sensing of the radiation from lamps 32, to provide a numerical readout of the intensity thereof.

After initializing of all variables, a first of the lamps 32 is ignited. The irradiance is measured by the master

calibration sensor, and the intensity of radiation of the lamp 32 is adjusted to the desired level as indicated by the numerical readout of the master calibration sensor.

The lamp wattage is then monitored and if not within desired limits the lamp should be removed and replaced. Otherwise, the process continues.

One then records the master sensor output verses the measurement of individual lamp irradiation output, as measured with the associated individual monitoring apparatus, namely light rod 54 and light sensor 56.

Then, each individual light monitoring system comprising the light monitor 56 and the individual wattage regulator 61, controlled through ROM and microprocessor 52, can be adjusted to maintain the appropriate value sensed by the individual light monitor as a correlation with the master sensor output.

The same process is then performed with respect to the next lamp, with the irradiance data being stored with respect to each lamp until all lamps have been thus calibrated. Following this, one removes the master calibration sensor.

From that time on, it can be known that the given irradiation output sensed for each lamp will result in a known total irradiance at the sample site. This calibration data remains good until the operating characteristics of the system change with aging. The above has been offered for illustrative purposes only, and is not intended to limit the scope of the invention of this application, which is as defined in the claims below.

That which is claimed is:

1. In a lightfastness testing chamber which comprises an enclosure for samples being tested, at least one lamp for irradiating samples in said enclosure, and means for monitoring the light intensity from the lamp, the improvement comprising, in combination: said monitoring means comprising a light transmission rod having one end positioned adjacent said lamp and another end in communication with light intensity measuring means positioned more remotely from the lamp than the one end, said light transmission rod being positioned on a side of said lamp that is substantially opposed to portions of said lamp that directly irradiate samples in said enclosure.

2. The testing chamber of claim 1 which comprises a plurality of lamps, and separate light transmission rods, each respectively having one end positioned adjacent a separate lamp, each rod communicating with light intensity measuring means, and control means for independently controlling the light intensity from each lamp in a manner responsive to the light intensity measuring means.

3. The testing chamber of claim 1 in which said light transmission rod is equipped with means for limiting light transmission through said rod to substantially that light which is emitted by said lamp.

4. The testing chamber of claim 3 in which the limiting means comprises an opaque sleeve carried in coaxial manner about the one end of said light transmission rod, to limit the light acceptance angle of said rod at its one end.

5. The testing chamber of claim 3 in which the limiting means comprises an opaque annular stop member carried at the one end of said light transmission rod.

6. The testing chamber of claim 1 in which said enclosure carries means for retaining in predetermined positions said samples being tested, plus means for moving said samples being tested toward and away from said